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SOME OBSERVATIONS ON THE LIFE HISTORY OF THE IDAHO RUFFED GROUSE

By Kenneth E. Hungerford

The Idaho Ruffed Grouse, as a distinct subspecies, is of particular interest to biologists and sportsmen of the Pacific Northwest. Its taxonomic position was established by Aldrich and Friedmann (1943), when they proposed a new subspecies, the Idaho Ruffed Grouse (*Bonasa umbellus phaios*). The geographic range includes that part of Idaho from the Boise National Forest north, the Blue Mountain country of Oregon, the northeast corner of Washington and southern British Columbia adjacent to the Idaho line. The type locality was specified as Priest River, Idaho. Two other new subspecies were proposed which occur in the state of Idaho. *Bonasa umbellus affinis* ranges into the southwestern corner of Idaho, and *Bonasa umbellus incanus* occurs in the southeastern corner of the state. *B. u. umbelloides* (Douglas) is present in the east central portion of the state adjacent to Yellowstone Park and north along the Montana line. The Idaho Ruffed Grouse proposed as a new subspecies was accepted by the A. O. U. Committee on Classification and Nomenclature (Wetmore, *et al.*, 1947). The approved name is *Bonasa umbellus phaia*, Aldrich and Friedman. (In a letter to the writer dated January 4, 1951, John W. Aldrich states that the subspecific name *phaia* was changed from the original *phaios* to agree in gender with the feminine name *Bonasa*. He also lists a new spelling of the subspecies *incana* for the same reason.)

ANNUAL LIFE CYCLE

The annual life cycle of the ruffed grouse logically begins during the winter. At this season of the year, the birds are solitary, scattered throughout the winter range areas, using as roosting sites heavy coniferous cover, or pockets in the snow. As the days begin to lengthen, the birds wander farther afield and by late February, the male grouse begin setting up drumming territories. By early March, the first drumming is heard. Drumming at first is scattered and intermittent and, as the territory becomes established, drumming is more intense. On Idaho ranges, the active drumming season is from the middle of March through the month of May, but sporadic drumming may be heard until late June. (Figure 1 portrays this graphically.)

I have repeatedly observed the drumming and display of the male ruffed grouse in Idaho which is essentially the same as for grouse I have observed in New England. The actual drumming procedure has been well described by Edminister (1947), and well illustrated by Darrow (Bump and Associates, 1947).

Direct evidence is scant on the laying and incubation periods of ruffed grouse in Idaho. Laying starts in late April or early May with some variation due to the altitude of the range. On the lower ranges, from 2,000 to 3,000 feet in altitude, hatching and brood development may be a week or ten days ahead of these activities from 1,000 to 2,000 feet higher. The best information on the beginning of the laying period has come from highway kills which show egg development within the body of the female. (The information on this phase of the life cycle is graphically shown in Figure 1.) Incubation is generally underway by early May. This places the hatching dates at late May or June. On the Flat Creek study area in Latah County, nearly all broods hatch during the first half of June.

Brood formations ordinarily consist of a single hen and from three to nine chicks. Females and young remain together as a brood formation during

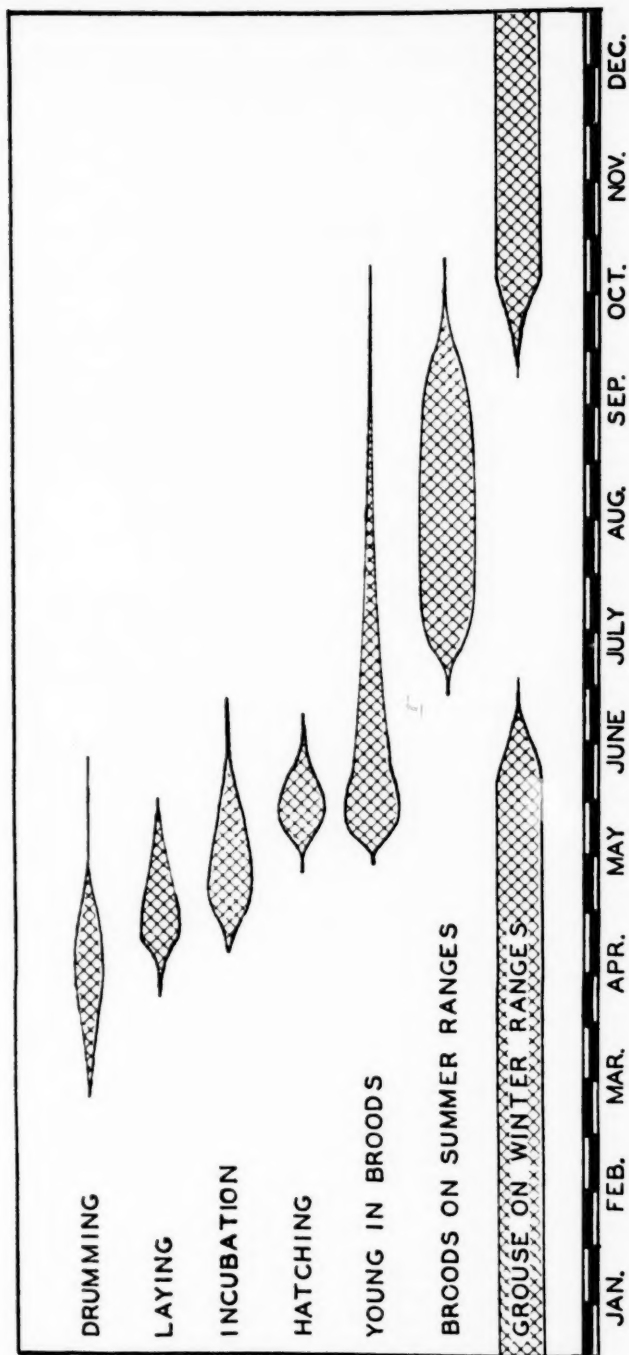


Figure 1

Graphic portrayal of the life history of the Idaho Ruffed Grouse in Northern Idaho.

July and most of August, and sometimes well through September. (As shown in Figure 1) there is a gradual decrease in the number of young in broods. This is a result both of predation and other losses and the increasing tendency of the young birds to become independent. By the middle of September, most of the brood formations have dispersed, but many were seen together as late as the last week in October.

Only one communal brood was observed on the Flat Creek Study area. The brood consisted of two females and a maximum of fifteen young during the 1948 brood season. During the following brood seasons, 1949, 1950, and 1951, single broods occupied this brood range.

Throughout the fall, there is a general shuffle of the population in which birds are moving from the ranges used during the summer back to those used during the winter months. There is apparently some connection with the dispersal of brood formations, since these were observed to remain longer on the summer ranges in the ravines than the solitary birds. Usually, the period from late September through October completes the fall movement and by November, the birds are back on the winter range areas.

WINTER HABITAT

The beginning of a new calendar year finds the Idaho forests blanketed with snow cover from two to four feet in depth. The snow cover is somewhat lighter on the ridges than along the ravines, mainly due to wind action and the more open stands of timber. The winter habitat of the Idaho ruffed grouse is along the ridges and the south-facing slopes in preference to the lower ravines and stream courses. Ridges are stocked with mixed stands of Douglas fir (*Pseudotsuga taxifolia*), grand fir, (*Abies grandis*) Ponderosa pine (*Pinus ponderosa*), Western white pine (*Pinus monticola*) and sometimes lodgepole pine (*Pinus contorta*) or Western larch (*Larix occidentalis*). Western red cedar (*Thuja plicata*) may occasionally be present with western hemlock (*Tsuga heterophylla*), but these species are more commonly found in the ravines or on the north-facing slopes. Ruffed grouse may use any of the tree species listed above as winter roosting cover with the exception of larch. The preferred species are Douglas fir, grand fir, western white pine and lodgepole pine. The heavy coniferous cover is also used during the day except during the feeding periods. During sunny days, the branches on the south and west sides are favored. The heavy evergreen growth formed by dense thickets of young trees from fifteen to twenty feet tall are most favored as roosting cover.

Snow roosting is common, particularly during a prolonged snowstorm or blizzard. The roost may be occupied for a number of days during a continuing storm. Snow roosts are apparently chosen with care, since they are always located in small openings in the forest cover. The sites are always away from drifting snow and from any tree crown where there is danger of an avalanche of snow burying the roosting bird. Clearings left by logging such as skid roads or log landings may be used for winter snow roosts as well as natural clearings.

The common shrub understory of the ridge types includes serviceberry (*Amelanchier florida*), huckleberry (*Vaccinium membranaceum*), mountain maple (*Acer glabrum*), ninebark (*Physocarpus malvaceus*), ocean spray (*Holodiscus discolor*), willow (*Salix spp.*) and snowberry (*Symphoricarpos albus*). Of these species, serviceberry is the most important source of buds for winter food. Usually, there is a morning and an afternoon feeding period. Nearly all

the budding is done on the low growing shrubs, although some budding is done on the mountain maple which approaches tree form. The amount of shrub cover varies considerably with the timber cover present. Some parts of the range may be notably lacking in shrub growth and, consequently, winter food is scarce.

Late winter finds grouse ranging farther from their ridge top roosting areas utilizing buds that may be exposed by melting snows. The "Chinook" winds, a warm relatively dry wind from the west or southwest, may make available many serviceberry and huckleberry buds which were covered by the snow earlier. Although the Chinook winds are not restricted to a particular period, they occur more commonly during the late winter months. By the end of the winter, the grouse have ranged more to the south-facing slopes and clearings, but there has been no general shift in population.

SPRING HABITAT

With the approach of spring, the grouse are still on the ridges and it is on the upper slopes that the drumming territories are established. The southwest, south or southeast portions of the upper slopes are favored for this important part of the range. The first drumming logs used are in temporary situations and usually are in a relatively exposed site. Later in the season, apparently as more serious drumming is underway, a drumming log in more dense cover is chosen. The typical drumming log is a well rotted ponderosa pine windfall. Some Douglas fir logs may be used, but they are exceptions. It was observed that windfalls are chosen in preference to the long butts or tops left as logging waste; however, one male drummed regularly on the top of a ponderosa pine left from logging. From direct observation of drumming males, it appears that they prefer a gradual incline to the ground level from the top of the drumming log as provided by the small top of a windfall or the top left as logging waste. A wind-thrown tree may also provide a gradual incline to the ground at the base when sufficient soil has been disturbed by the roots to engulf the bole.

Budding during the early spring continues to be an important method of feeding. Soon the catkins of willow, alder or poplar become an important item of food. The males in particular begin feeding on the catkins of willow as soon as these begin their rapid growth. Droppings left on the drumming logs early in the season are usually composed 100 per cent of the small scales of willow catkins. Fresh green vegetation and occasional insects are included in the diet as soon as they are available in the sunny openings. Roosting continues to be in the dense coniferous thickets and midday may be spent resting in the conifer trees on the sunny sides of clearings.

The few nests located in this study have been found in upland areas close to the winter ranges on the ridges, and close to drumming territories. All young broods observed have also been in these upland areas. All observations point to the use of similar parts of the range through the winter and spring and very little shift from the areas used during the winter. The ridges and upper slopes are used as nesting areas and for early rearing areas for broods. The sunny openings appear to have a definite part in the range used at this season — although nests have been found more than 300 feet from the nearest opening.

The first locations at which broods are found each spring with the chicks a week or less in age are quite similar. These are sunny openings with a general south exposure. They are usually in open Douglas fir stands with an understory of tree reproduction and shrub growth. Broods remain on these portions of the range during late June and early July. The parts of the ranges used at this season are midway between the ridges and the small ravines.

SUMMER HABITAT

As the season advances with the days becoming warmer, broods begin a seasonal movement down the ravines where more dense cover is found. There is also a gradual drying of the springs at the heads of the ravines which usually coincides with this movement of the broods to lower elevations. The broods are never found far from a source of free water from mid-July through the dry part of the summer. While broods have never actually been observed drinking from these sources of water, droppings and tracks indicate that a daily visit is made to these sites. Dew moisture is also plentiful in the ravines.

During the summer, there is a definite diurnal movement from the ravines and water sources to the roosting cover. The roosting cover chosen is ordinarily at least 20 to 25 feet higher in elevation than the lower part of the brood range which is usually at the water source. As the brood leaves the roost in the morning, there is a period of morning feeding in the small sunny openings near roosting cover. During the day, the brood has moved down into the ravine where the day is spent dusting and feeding in the sunny edges or resting in the dense cover in the ravine usually near the source of water. In the evening between 4:00 and 6:00 p. m., and as late as 7:30 p. m. on the longest days, there is a period of active feeding. This feeding period ordinarily lasts until dark. Broods commonly feed along old logging roads, railroad grades, landings, skid roads or in natural openings in the forest during this evening feeding period. Clover, grass, and small ground cover plants in the openings are the foods eagerly sought at this hour. As dark comes the brood abruptly leaves the feeding area and moves upward. Within 15 to 20 minutes, the brood is settled on the roosts. Brood movements and cover use were described in more detail in an earlier paper. (Hungerford, 1951)

Roosting cover during this season is apparently not critical. Any heavy coniferous cover may be used, usually a clump of two to four inch diameter trees with well filled crowns. Nearly all species of conifer trees growing on the brood ranges have been utilized as roosting cover. The elevation of the cover in relation to the ravines seems to be the critical factor.

The moulting season for the adults is during August. Adults at this season have been observed with the complete tail moulted. Bailey (Bailey and Bailey, 1918) also reports seeing male grouse with moulted tails in Glacier National Park at this time. The juvenile birds have usually developed the full adult plumage by late September.

FALL HABITAT

During October, there is completed a general shift of the grouse populations to the slopes and ridges which had begun in late September. The seasonal rainstorms coming about mid-September make free water available at many locations that have been dry all summer. It is this series of rainstorms usually occurring in September which signals the gradual shift from the summer ranges to the winter range. This movement is variable, apparently depending on the amount and character of the precipitation, the location of the berries and fruits used as foods during this season, and to some extent upon the hunting season. By late November the grouse diet has shifted to the buds of hardwood growth which make up the winter food, and most birds are on the upper slopes and ridges in the winter habitat.

SUMMARY

The Idaho Ruffed Grouse, as a distinct subspecies, is described relative to

its taxonomic position and the life cycle. Observations on drumming, laying, incubation and hatching periods are presented. The organization and movements of the broods are described.

Seasonal habitat, including winter, spring, summer and fall, is described including the movements during the year, diurnal movements and the important classes of food in each seasonal habitat.

ACKNOWLEDGEMENTS

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MOVEMENT OF COLUMBIAN BLACK-TAILED DEER IN THE WILLAPA HILLS AREA, WASHINGTON

Fred Zwickel, Gardiner Jones, Homer Brent

In June, 1949 the State of Washington Department of Game initiated a study of the Columbian black-tailed deer (*Odocoileus hemionus columbianus*) on the Clemons Tree Farm which is located at the northern end of the Willapa Hills in Western Washington. This area lies south of the Olympic Peninsula and west of the Puget Sound basin and is a region of low, rough hills, few of which are over 2,000 feet in elevation.

During the fawning period each year fawns are tagged to gather information on movement, weights and sex ratios of fawns, length and peak of fawning period, and other life history and management information. Since the spring of 1949 six hundred and thirty-nine fawns have been tagged in the Clemons Tree Farm area. Forty-four of these have been individually marked with colored plastic markers in addition to the regular tags. This paper concerns the movement data collected to date from tag returns, observations of individually marked deer, and observations of movements of two semi-tame deer.

METHODS

Deer are marked by tagging fawns during the fawning period each year. This period usually includes the last week in May and the first three weeks in June. Fawns are found by driving the numerous logging roads and watching for does with fawns or does that may have fawns. Does seen without young are watched to see if they exhibit any maternal characteristics such as swollen udders, a reluctance to leave the area, or excitement to one's presence. Fawns are frequently found in the vicinity where these does are first seen.

Fawns up to a week old are readily caught because they will normally drop flat to the ground when startled or frightened. Those which do not drop can usually be out-run up to the time that they are about three weeks old.

After the fawn is caught a small aluminum tag is clamped in its ear. This tag is similar to that used by livestock owners and is inscribed with an individual number and the wording, "Washington Department of Game". The fawn is then released and is soon rejoined with the doe.

To determine movements by field observations certain animals are individually marked with colored plastic squares. One piece of colored plastic, approximately two inches square, is placed on each side of the ear and these are held in place by a small aluminum grommet clamped through the ear. A relatively large number of individuals can be marked by this method by varying the color, the ear in which a specific color is placed, and by a series of ear crops in various combinations with the plastic markers.

Returns are obtained primarily by collection of the tags of hunter-killed deer at checking stations. A few returns have been obtained by voluntary surrender of the tags by hunters, by Department personnel collecting the tags during field checks, or by collection of the tagged animals for biological purposes. Most of the sight records of individually marked deer have come from specific field trips for that purpose though a few have come from sight records during the course of other field work.

All movement distances recorded in this paper are the minimum air-line distances that the deer could have traveled from the site of tagging to the location of kill, or in the case of sight observation of deer marked with plastics, the location where seen.

FINDINGS

Tag Returns: Of 60 tag returns obtained through March, 1953, 54 have been hunter-kills, three have been road-kills, and three have been from winter collections. Fifty-three of the hunter-killed deer have been taken in October and one in November. Two of the road-killed deer were killed in their first summer as fawns and one in its first winter as a fawn. The age classes represented by these returns are as follows: five months old—33 deer, 17 months old—12 deer, 29 months old—14 deer, and 1 unknown.

Analysis of the fawn movement from the hunting season, summer, and winter tag returns (Table 1) shows that the greatest movement from location of tagging to location of kill was six miles. It can be seen from this Table however that of 31 tag returns with known distances, 25 or 81 percent, were killed less than one mile from where tagged while 29, or 94 percent were killed less than three miles from where tagged. The one fawn which traveled six miles was tagged in June, 1951 near the top of Capitol Peak (elevation—2,640). This deer was killed by a car in the Chehalis River valley in January, 1952.

Tag returns from the yearling deer (17 months old), with one exception, present a similar picture. Of 12 hunting season returns from this age class, 10 or 83 percent, were killed 3.15 miles from the point of tagging while a male was killed 11 miles from the point of tagging.

The returns of tags from 2½ year old animals (29 months old) do not follow the same patterns as those shown by the fawns and yearlings. While the returns from the does show a maximum movement of 1.25 miles, those from the bucks show movements ranging from zero to 16 miles.

Observations of Plastic-marked deer: A total of 44 deer have been marked with plastic air-markers. From these, 18 sight records have been made of 11 different deer. Thirteen of the 18 sight records have been made within three

TABLE I
Distances (Air Line Miles) Traveled from Location of Tagging to
Location of Kill (From Tag Return Data Only)

	6 months		Age Group of Deer 17 months		29 months	
	Male	Female	Male	Female	Male	Female
Summer Returns	0.3					
Fall Returns	0.0			0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.5	0.0
	0.0	0.0	0.0	0.3	1.0	0.5
	0.0	0.0	0.0	0.5	2.5	1.22
	0.0	0.0	0.25	3.15	4.25	
			0.7		5.0	
	0.25	0.0	11.0		10.0	
	0.25	0.0			16.0	
	0.3	0.5				
	0.3	0.6				
	0.5	0.6				
	1.7	0.75				
	1.75	0.9				
	2.4	1.1				
	3.0					
Winter Returns		0.0				0.0
		6.0				0.15

months of tagging, or during the deer's first summer. None of these have been seen over one-half mile from the tagging location. Three winter observations have been made of which two (a set of twins observed at one time) were within 0.25 miles of the tagging location and one was 1.5 miles from tagging location. The two twins were again seen in June, 1952 in the same location as seen during the winter period. They were both killed by hunters in October, 1952. One was killed in approximately the same location as tagged while the other was killed 0.7 miles from where tagged.

Observations of two semi-tame deer: Although the behavior of semi-tame deer may not simulate that of animals in wild populations, four unusual movements made by two of the project's experimental deer are presented here. These deer had been hand-raised from fawns and were both quite tame. The experimental deer are free to roam except while feeding or breeding experiments are underway. They receive grain supplements throughout most of the year.

A two-year-old buck raised at the project headquarters, moved a distance of 19 miles to the south of the headquarters area during July, 1951. This move was made over a period of three weeks or less. He was seen several times over a period of two to three weeks in the immediate vicinity to which he had moved. He was then picked up and returned to the experimental pens at the project headquarters.

On April 4, 1951 a doe fawn was received from a party living near Shelton, Washington. This fawn was held in the experimental pens until April sixth and then turned out on her own. She was harassed by the other deer. New deer placed in the experimental herd are usually harassed until they establish a place in the herd. On April sixth, the day of release, she disappeared from the headquarters area. On May first she was reported approximately one mile from the headquarters area. Sometime during June she visited a farm six airline miles distant and then wandered on to Malone, a small community in the Chehalis Valley which is about seven miles from headquarters. She was picked up at Malone and returned to the experimental pens on July 12. On August third at 7:00 A. M. she was again turned out of the pens. Shortly after noon of the same day a phone call was received from the owner of the farm which she had visited in June stating that she had returned. Besides covering six miles in six hours, this trip necessitated her swimming the Chehalis River. She was picked up on August 4 and returned to the project pens. After spending approximately 11 months in the pens she was turned out again on July 1, 1952. On July third she was reported at the same farm. She was picked up and confined to the project pens.

DISCUSSION

Movement of an individual animal, animal population, or segment of an animal population can be influenced by several different factors. Murie (1951) in his treatise on North American elk states that the reason for migration (one type of movement) is to find new feeding grounds. Hamilton (1939) states that emigration may be induced by lack of food, search for more congenial climate, or an overpopulation. Elton (1930) is quoted by Leopold (1933) as thinking that a disharmony with the environment stimulates movement. Leopold lists such factors as overpopulation, weather, activity in the decimating factors (predation, disease, accidents, etc.), or deficiency in the welfare factors (food, water, shelter, etc.) as temporary disturbances of the environment. According to Pearse (1939) food, temperature, and breeding are factors animals can adjust to by migrating. Speaking of migration in mule deer (*Odocoileus hemionus hemionus*) Allee, Emerson, Park, Park and Schmidt (1949) say that snow motivates the downward movement and food the upward movement.

The causes of movement presented by these authors are well summarized in those presented by Darling (1937), writing of red deer (*Cervus elaphus*) in Scotland. He considered four basic factors as the causes of movement. These are:

1. Meteorological - - - the effects of weather.
2. Biological - - - mostly disturbances caused by such things as insects and predators.
3. Physiological - - - this includes such factors as nutrition and reproduction.
4. Psychological - - - these are mainly factors of "choice" and include such things as curiosity, play, and other factors concerning insight and foresight.

From tag returns of fawns and yearlings and from observations of plastic-marked fawns and yearlings (Table 1) it may be seen that the movements of these two age groups, with two exceptions, have been quite restricted. One exception, the six mile move, is one of a female fawn moving from a high summer range to a lowland wintering area. The other exception is that of a yearling buck killed 11 miles from the site of tagging during the 1952 hunting season. Returns on the five other yearling bucks show no movement over one mile. This 11 mile move appears to be an exception to the general rule though Leopold, Riney, McCain and Tevis (1951) record yearling mule deer bucks leaving the doe at nine months of age while yearling does may stay with the adult doe through the second winter. They also state that young bucks move more than young does.

Fifty-one, or 85 percent, of the 61 location records of fawns and yearlings show that the deer were killed or seen less than one mile from the tagging site while the only two, or three percent, were killed over four miles from the point of tagging. Discounting the two exceptions a winter movement forced by snowfall and the 11 mile move by a yearling buck, the data on the fawn and yearling age classes indicate that there is little movement to areas of new home range although seasonal migrations may take place that would not be evident from hunting season tag returns and the limited number of year-round sight observations.

All returns from the 2½ year old deer except two are from hunter-killed deer and represent the month of October plus one November hunter-killed return. The two exceptions are one December collection and one March collection both being females. The six returns from the does in this age class show little movement, the greatest being 1.25 miles, as with the yearlings and fawns, indicates a small home range. Only two of these returns are from the winter period and this is undoubtedly not a large enough number to be valid in indicating possible seasonal movements.

Although the number of returns from 2½ year old bucks is small (8 returns), the pattern exhibited by these is so variable from that of the does and younger age classes that certain tentative indications are apparent. At present an answer to the reasons for this differential movement between the males in this age group and the other tagged deer can be arrived at only through speculation.

Olson (1938) reported a similar type of differential movement between tagged whitetail bucks and does (*Odocoileus virginianus*) in Minnesota although he presented no data concerning the age classes of these animals.

Since weather or other meteorological influences would probably affect both sexes similarly, this does not appear to be plausible explanation of the greater

movements exhibited by the bucks. Weather might, however, have some indiscernible effects on the physiology of the different sexes. Biological factors such as predation, insects, etc., would also be expected to affect both sexes similarly.

On the other hand, physiological or psychological factors or a combination of the two could affect the two sexes differently. Because the two sexes are different in their reproductive physiology this or conceivably population pressures might operate more strongly on one sex than on the other.

Since all returns from this age class of bucks have come from the fall period the movements shown by these deer might be caused by an active search for does in heat. According to Darling (op. cit.) red deer stags in Scotland, during the rut may travel 10 to 20 miles in a short time. He records having watched one stag cover six to seven miles in $1\frac{1}{2}$ hours. Dixon (1934) states that mule deer bucks have been known to travel as much as 10 miles overnight. It appears from the data on tag returns and behavior of other deer that the movements shown by this group of deer are related to some factor of the rutting period. Whether the deer that these tag returns represent would eventually return to their original home range or whether these movements represent their year-long home range cannot be determined with only hunting season returns.

The differential movement exhibited by the different age classes of bucks may indicate that the younger bucks, fawn and yearling males, may not be sexually mature and consequently not moving in search of a mate. It may, however, be a result of some factor such as that found by Bradt (1947) in operation in beaver colonies. He found that young beaver (both sexes) are allowed to remain in the colony for two years, after which time they are forced to emigrate by the older beaver. Such an intraspecific factor could conceivably be operating on only the male sex of the deer population.

The movements of the two semi-tame deer, although they may not be valid for wild deer, indicate some interesting features of movement. The 19 mile move made by the two year old buck was made during mid-summer, a period when the food supply is ample and the breeding season has not yet begun. He was well established in the herd and therefore, should not have been forced to move because of intraspecific strife. It appears that this move was motivated by mere wandering or choice. Darling (op. cit.) points out that the matter of choice in animal behavior should not be overlooked.

The first move made by the doe fawn may have been caused by intraspecific intolerance. By the time of the second move, however, she had established a position in the herd and such a factor should have had little effect. Since all of the movements made by this deer took place in the spring or summer, neither a food shortage or breeding should have had any influence. Her repeated return to the same farm indicates a keen sense of direction, especially since the six mile trip was made in approximately six hours. The third return to this farm after 11 months in a pen, indicates an excellent memory and at least some foresight. Whether such characteristics are widespread in our wild populations is not known but if they are they could have considerable influence on population behavior and distribution.

SUMMARY

Through intensive fawn tagging 639 fawns have been tagged in the Clemons Tree Farm area over a three-year period. Forty-four of these have been individually marked with colored plastic markers.

Fifty-eight tag returns and 18 observations of plastic-marked deer show that 85 per cent (52 animals) of the fawn and yearling deer were seen or

killed within one mile of the location of tagging while only three per cent (2 animals) were seen or killed over four miles from the location of tagging. Six returns from 2½-year-old does show that none were killed over 1.25 miles from the tagging site. Eight returns from 2½-year-old bucks show movements ranging from zero to 16 miles, with four of the eight bucks being killed over four miles from the site of tagging. It is believed that this differential movement by the bucks in this age class is primarily a result of the rutting period though population pressures or intraspecific strife may also be in operation.

Movements of two semi-tame deer indicate that some movements may be a result of mere wandering or choice.

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GENERAL NOTES

Starlings Nesting In Washington

On May 10, 1953, on the west bank of the Snake River, near Silcott, Washington (9 miles west of Clarkston in extreme eastern Washington) three pairs of Starlings (*Sturnus vulgaris*) were found to be nesting. The nest sites, varying in height between $6\frac{1}{2}$ and 20 feet, were located in a small grove of willows growing on the sandy river bank. Attention was directed to the nesting activities when one of the adults flew away from a tree with a whitish pellet, which, according to Starling custom, was dropped a hundred feet or so from the nest tree.

It was necessary to chop open the trunk of the nest tree for purposes of examination, and in the process, the rotten trunk snapped, crushing two of the five young in the nest. One adult was collected by the writer's son, and turned over to the Charles R. Conner Museum at the State College of Washington.

This appears to be the second nesting record for the Starling in the state of Washington, an earlier instance being reported, by George E. Hudson, at Roxboro, in Lind Coulee. (Murrelet, Vol. 32, No. 2, 1951.)—NORMAN BRADEN, *State College of Washington, Pullman*.

Townsend Solitaire in North Vancouver, B. C.

The rather unusual occurrence of a flock of Townsend Solitaires (*Myadestes townsendii*) was reported to Professor G. J. Spencer of the U.B.C. by Mrs. Carol St. Pierre who lives on Frederick Road, Lynn Valley, North Vancouver, B.C., at an altitude of 500 feet above sea level. Mrs. St. Pierre states that these birds were first drawn to her attention on April 5th by their beautiful singing and that she estimated that there were between 25 and 30 birds in the flock. These solitaires remained for three days about her own and a neighbour's garden as well as in the nearby bush. They then began to spread thinly throughout the district and could be found in ones and twos the length of their block. During the time of greatest concentration these solitaires sang a great deal. Nearly all had departed by April 21st and the last seen was on April 24th.

These birds appeared very bright and lively and not very shy for they permitted members of the family to approach within 20 feet for close examination.

Mrs. St. Pierre also noted that these solitaires would fly from the low branches of their pear tree to the ground to seize worms and return to their perches to swallow them, and also that they ate a great many holly berries.

On April 6th Mr. Spencer and Dr. Udvardy saw three solitaire on the U. B. C. Campus trees.

Most observers have usually seen from one to three solitaires at one time so the spring time flock recorded by Mrs. St. Pierre is of particular interest for, apparently, there is no published record of the spring time flocking of these birds. Bent (p. 328) mentions that Frank Bond saw a great gathering of solitaires in a canyon near Cheyenne, Wyo., in winter and that they were there in countless thousands and all were in song. Dawson and Bowles in "The Birds of Washington," p. 228, state that Dr. J. S. Newberry encountered hundreds of these birds in full song at the base of Mount Jefferson, Oregon during the month of September.

Occasionally the Townsend Solitaire winters in British Columbia and I have a note of having seen one on a stub by the side of the railroad tracks between Alta and Nita Lakes on December 29, 1945.

Mr. Wm. Hughes also saw a solitaire in Vancouver City on Feb. 11, 1952.—KENNETH RACEY, *Vancouver, B.C., June 19, 1953*.

Red-legged Kittiwake in Oregon

On March 25, 1951, I found an adult red-legged kittiwake (*Rissa brevirostris*) on the beach at Waldport, Lincoln County, Oregon. Most of the flesh and the viscera had been eaten by gulls so that the sex could not be determined, and only wings and feet were preserved to substantiate the record. This is thought to be the second reported occurrence of the species in the state. The first was taken January 28, 1933, at Delake, Lincoln County, (Gabrielson and Jewett, "Birds of Oregon," 1940).—J. A. MUNRO, *Okanagan Landing, British Columbia, August 1, 1953.*

Pine Grosbeaks in Surrey, B. C.

On February 19th, 1953, William Plaxton and I were driving through Crescent Beach and stopped at the Fresh Air Camp to examine a crab-apple tree which was already nearly in leaf. We were very interested to note a flock of six pine grosbeaks (*Pinicola enucleator*) in the branches busily picking off the buds. They were extremely tame and allowed us to approach within a few feet. None of them was showing the rosy-red colour of the adult red male.

In the thirty-three years I have known the Municipality of Surrey this is my first record for pine grosbeaks. They remained in the vicinity for about a week. H. N. Clarke of Crescent Beach and E. E. Woodford of Ocean Park have also reported seeing pine grosbeaks during the past winter. J. W. Winson in a letter to me recently mentioned that pine grosbeaks had been seen in the Huntingdon district.—MARTIN W. HOLDOM, *Crescent Beach, B. C.*

Sight Record of Yellow-Shafted Flicker in South Idaho

On September 27, 1952, the writer saw a yellow-shafted flicker (*Colaptes auratus luteus*) on Elk Mountain approximately six miles south of Three Creek, in Owyhee County, Idaho. When first seen, the bird was sitting on a fence post on the Idaho-Nevada state line fence. The bird was first observed through 6-power binoculars and later at short range with the unaided eye at such distance that mistaken identification would have been almost impossible. The bird was subsequently flushed and flew northward. The yellow wing and tail coloration was distinctly seen in flight. The sight record was made at an elevation of about 7000 feet at 10:00 a. m.—LEONARD W. HOSKINS, *Elko, Nevada, May 6, 1953.*

Sight Record of Yellow-Shafted Flicker in Southern Idaho

This is the first southern Idaho record for the Yellow-shafted Flicker (*Colaptes auratus luteus*) of which this observer has knowledge.

The bird was seen December 13, 1952, in the Snake River Valley near the Hagerman Wildlife Refuge, approximately four miles south of the town of Hagerman. The observation was made by the writer about 1:00 p. m. at fifty feet in clear sunlight. The bird took off from directly in front of the car and flew ahead of the car for a short distance. Characteristic flicker flight, white rump, and yellow of the underwings made identification positive.—MICHAEL THROCKMORTON, *May 6, 1953.*

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